

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A method of dispersion compensation comprising the steps of:

receiving an optical signal having a number of channels separated by wavelength; and,
applying dispersion compensation over at least ~~one predetermined wavelength band~~,
~~independently of wavelengths outside the wavelength band spans a plurality of channels~~
~~numbering less than the total number of channels in the signal one optical path, wherein said~~
~~optical carries a wavelength band which spans a plurality of channels numbering less than the~~
~~total number of channels in the optical signal, thereby applying dispersion compensation to said~~
~~wavelengths outside said wavelength band.~~

2. (previously presented): A method according to claim 1, further comprising the steps of:

splitting the plurality of channels into two or more wavelength bands;
propagating the two or more wavelength bands along separate optical paths, wherein dispersion compensation is applied in at least one of the optical paths; and, subsequently re-combining the signals at an optical output.

3. (previously presented): A method according to claim 2, in which the signal carried by at least one of the optical paths is amplified to compensate for losses.

4. (previously presented): A method according to any preceding claim, in which dispersion compensation is provided by means of a number of lengths of dispersion compensating optical fibre.

5. (previously presented): A method according to claim 1, including the step of: passing the entire optical signal through a band dispersion compensation element adapted to apply dispersion compensation only to channels within a predetermined wavelength band.

6. (previously presented): A method according to claim 5, in which channels outside the predetermined wavelength band are reflected by a separate optical element.

7. (previously presented): A method according to claim 5 or 6, in which the dispersion compensating element is a photorefractive element or a diffraction grating.

8. (previously presented): A method according to any preceding claim, further comprising the step of:

imposing a uniform delay to a particular wavelength band to compensate for relative dispersion between the particular wavelength band and a second different wavelength band.

9. (currently amended): A dispersion compensation device for applying dispersion compensation to an optical signal having a number of channels, comprising a dispersion compensation element which is configured to apply dispersion compensation to at least one

optical path carrying only to a a predetermined wavelength band ~~independently of wavelengths outside the wavelength band, the predetermined wavelength band~~ spanning a plurality of channels numbering less than the total number of channels of the optical signal, thereby applying dispersion compensation to the predetermined wavelength band independently of wavelengths outside the predetermined wavelength band.

10. (previously presented): A device according to claim 9, further comprising a band splitter arranged to feed two or more optical paths, wherein at least one of the optical paths comprises a dispersion compensation element.

11. (previously presented): A device according to claims 9 or 10, in which the dispersion compensation element comprises a length of dispersion compensating optical fibre.

12. (previously presented): A device according to any of claims 9 to 11, further comprising an optical coupler arranged to feed an optical signal received at an optical input to an optical path having a dispersion compensation element, the dispersion compensation element being adapted to apply dispersion compensation to a number of channels within a limited bandwidth and reflect signals within that bandwidth to an optical output of the optical coupler.

13. (previously presented): A device according to claim 12, in which the optical coupler is an optical circulator .

14. (previously presented): A device according to any of claims 9 to 13, in which the dispersion compensation element is a diffraction grating.

15. (previously presented): A device according to any one of claims 9 to 13, in which the dispersion compensation element is a photorefractive element.

16. (previously presented): A device according to any of claims 9 to 15, in which the dispersion compensation device further comprises an optical reflector coupled to the dispersion compensating element to reflect optical signals outside of the predetermined bandwidth to the optical output of the optical coupler .

17. (previously presented): A device according to any of claims 9 to 16, further comprising a delay element to provide inter-band dispersion compensation.

18. (previously presented): A device according to claim 17, in which the delay element is a length of optical fibre coupled between the dispersion compensation element and the optical reflector.

19. (previously presented): A dispersion compensation device according to any of claims 9 to 18 comprising a housing having at least one spool of dispersion compensation fibre arranged axially within the housing so as to provide a passage extending along a length of the housing through the core of the spool.

20. (previously presented): A device according to claim 19, in which the housing is a submarine housing.

21. (previously presented): A device according to claim 20, in which the submarine housing is a casing for an optical repeater.

22-23. (canceled).